



RULES FOR THE DESIGN AND CONSTRUCTION OF DRILLING SYSTEMS

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Emirates Classification Society (Tasneef)
Aldar HQ 19th Floor,
Al Raha Beach, Abu Dhabi, UAE
Abu Dhabi, United Arab Emirates

Phone (+971) 2 692 2333
Fax (+971) 2 445 433
P.O. Box. 111155
info@tasneef.ae

GENERAL CONDITIONS

Definitions:

"Administration" means the Government of the State whose flag the Ship is entitled to fly or under whose authority the Ship is authorized to operate in the specific case.

"IACS" means the International Association of Classification Societies.

"Interested Party" means the party, other than the Society, having an interest in or responsibility for the Ship, product, plant or system subject to classification or certification (such as the owner of the Ship and his representatives, the ship builder, the engine builder or the supplier of parts to be tested) who requests the Services or on whose behalf the Services are requested.

"Owner" means the registered owner, the ship owner, the manager or any other party with the responsibility, legally or contractually, to keep the ship seaworthy or in service, having particular regard to the provisions relating to the maintenance of class laid down in Part A, Chapter 2 of the Rules for the Classification of Ships or in the corresponding rules indicated in the specific Rules.

"Rules" in these General Conditions means the documents below issued by the Society:

- (i) Rules for the Classification of Ships or other special units;
- (ii) Complementary Rules containing the requirements for product, plant, system and other certification or containing the requirements for the assignment of additional class notations;
- (iii) Rules for the application of statutory rules, containing the rules to perform the duties delegated by Administrations;
- (iv) Guides to carry out particular activities connected with Services;
- (v) Any other technical document, as for example rule variations or interpretations.

"Services" means the activities described in Article 1 below, rendered by the Society upon request made by or on behalf of the Interested Party.

"Ship" means ships, boats, craft and other special units, as for example offshore structures, floating units and underwater craft.

"Society" or "TASNEEF" means Tasneef and/or all the companies in the Tasneef Group which provide the Services.

"Surveyor" means technical staff acting on behalf of the Society in performing the Services.

Article 1

- 1.1. The purpose of the Society is, among others, the classification and certification of ships and the certification of their parts and components. In particular, the Society:
 - (i) sets forth and develops Rules;
 - (ii) publishes the Register of Ships;
 - (iii) issues certificates, statements and reports based on its survey activities.
- 1.2. The Society also takes part in the implementation of national and international rules and standards as delegated by various Governments.
- 1.3. The Society carries out technical assistance activities on request and provides special services outside the scope of classification, which are regulated by these general conditions, unless expressly excluded in the particular contract.

Article 2

- 2.1. The Rules developed by the Society reflect the level of its technical knowledge at the time they are published. Therefore, the Society, although committed also through its research and development services to continuous updating of the Rules, does not guarantee the Rules meet state-of-the-art science and technology at the time of publication or that they meet the Society's or others' subsequent technical developments.
- 2.2. The Interested Party is required to know the Rules on the basis of which the Services are provided. With particular reference to Classification Services, special attention is to be given to the Rules concerning class suspension, withdrawal and reinstatement. In case of doubt or inaccuracy, the Interested Party is to promptly contact the Society for clarification. The Rules for Classification of Ships are published on the Society's website: www.tasneef.ae.
- 2.3. The Society exercises due care and skill:
 - (i) in the selection of its Surveyors
 - (ii) in the performance of its Services, taking into account the level of its technical knowledge at the time the Services are performed.
- 2.4. Surveys conducted by the Society include, but are not limited to, visual inspection and non-destructive testing. Unless otherwise required, surveys are conducted through sampling techniques and do not consist of comprehensive verification or monitoring of the Ship or of the items subject to certification. The surveys and checks made by the Society on board ship do not necessarily require the constant and continuous presence of the Surveyor. The Society may also commission laboratory testing, underwater inspection and other checks carried out by and under the responsibility of qualified service suppliers. Survey practices and procedures are selected by the Society based on its experience and knowledge and according to generally accepted technical standards in the sector.

Article 3

- 3.1. The class assigned to a Ship, like the reports, statements, certificates or any other document or information issued by the Society, reflects the opinion of the Society concerning compliance, at the time the Service is provided, of the Ship or product subject to certification, with the applicable Rules (given the intended use and within the relevant time frame). The Society is under no obligation to make statements or provide information about elements or facts which are not part of the specific scope of the Service requested by the Interested Party or on its behalf.
- 3.2. No report, statement, notation on a plan, review, Certificate of Classification, document or information issued or given as part of the Services provided by the Society shall have any legal effect or implication other than a representation that, on the basis of the checks made by the Society, the Ship, structure, materials, equipment, machinery or any other item covered by such document or information meet the Rules. Any such document is issued solely for the use of the Society, its committees and clients or other duly authorised bodies and for no other purpose. Therefore, the Society cannot be held liable for any act made or document issued by other parties on the basis of the statements or information given by the Society. The validity, application, meaning and interpretation of a Certificate of Classification, or any other document or information issued by the Society in connection with its Services, is governed by the Rules of the Society, which is the sole subject entitled to make such interpretation. Any disagreement on technical matters between the Interested Party and the Surveyor in the carrying out of his functions shall be raised in writing as soon as possible with the Society, which will settle any divergence of opinion or dispute.
- 3.3. The classification of a Ship, or the issuance of a certificate or other document connected with classification or certificate on and in general with the performance of Services by the Society shall have the validity conferred upon it by the Rules of the Society at the time of the assignment of class or issuance of the certificate; in no case shall it amount to a statement or warranty of seaworthiness,

structural integrity, quality or fitness for a particular purpose or service of any Ship, structure, material, equipment or machinery inspected or tested by the Society.

- 3.4. Any document issued by the Society in relation to its activities reflects the condition of the Ship or the subject of certification or other activity at the time of the check.
- 3.5. The Rules, surveys and activities performed by the Society, reports, certificates and other documents issued by the Society are in no way intended to replace the duties and responsibilities of other parties such as Governments, designers, ship builders, manufacturers, repairers, suppliers, contractors or sub-contractors, Owners, operators, charterers, underwriters, sellers or intended buyers of a Ship or other product or system surveyed.

These documents and activities do not relieve such parties from any fulfilment, warranty, responsibility, duty or obligation (also of a contractual nature) expressed or implied or in any case incumbent on them, nor do they confer on such parties any right, claim or cause of action against the Society. With particular regard to the duties of the ship Owner, the Services undertaken by the Society do not relieve the Owner of his duty to ensure proper maintenance of the Ship and ensure seaworthiness at all times. Likewise, the Rules, surveys performed, reports, certificates and other documents issued by the Society are intended neither to guarantee the buyers of the Ship, its components or any other surveyed or certified item, nor to relieve the seller of the duties arising out of the law or the contract, regarding the quality, commercial value or characteristics of the item which is the subject of transaction.

In no case, therefore, shall the Society assume the obligations incumbent upon the above-mentioned parties, even when it is consulted in connection with matters not covered by its Rules or other documents.

In consideration of the above, the Interested Party undertakes to relieve and hold harmless the Society from any third party claim, as well as from any liability in relation to the latter concerning the Services rendered.

Insofar as they are not expressly provided for in these General Conditions, the duties and responsibilities of the Owner and Interested Parties with respect to the services rendered by the Society are described in the Rules applicable to the specific Service rendered.

Article 4

- 4.1. Any request for the Society's Services shall be submitted in writing and signed by or on behalf of the Interested Party. Such a request will be considered irrevocable as soon as received by the Society and shall entail acceptance by the applicant of all relevant requirements of the Rules, including these General Conditions. Upon acceptance of the written request by the Society, a contract between the Society and the Interested Party is entered into, which is regulated by the present General Conditions.

- 4.2. In consideration of the Services rendered by the Society, the Interested Party and the person requesting the service shall be jointly liable for the payment of the relevant fees, even if the service is not concluded for any cause not pertaining to the Society. In the latter case, the Society shall not be held liable for non-fulfilment or partial fulfilment of the Services requested. In the event of late payment, interest at the legal current rate increased by 1.5% may be demanded.

- 4.3. The contract for the classification of a Ship or for other Services may be terminated and any certificates revoked at the request of one of the parties, subject to at least 30 days' notice to be given in writing. Failure to pay, even in part, the fees due for Services carried out by the Society will entitle the Society to immediately terminate the contract and suspend the Services.

For every termination of the contract, the fees for the activities performed until the time of the termination shall be owed to the Society as well as the expenses incurred in view of activities already programmed; this is without prejudice to the right to compensation due to the Society as a consequence of the termination.

With particular reference to Ship classification and certification, unless decided otherwise by the Society, termination of the contract implies that the assignment of class to a Ship is withheld or, if already assigned, that it is suspended or withdrawn; any statutory certificates issued by the Society will be withdrawn in those cases where provided for by agreements between the Society and the flag State.

Article 5

- 5.1. In providing the Services, as well as other correlated information or advice, the Society, its Surveyors, servants or agents operate with due diligence for the proper execution of the activity. However, considering the nature of the activities performed (see art. 2.4), it is not possible to guarantee absolute accuracy, correctness and completeness of any information or advice supplied. Express and implied warranties are specifically disclaimed.

Therefore, except as provided for in paragraph 5.2 below, and also in the case of activities carried out by delegation of Governments, neither the Society nor any of its Surveyors will be liable for any loss, damage or expense of whatever nature sustained by any person, in tort or in contract, derived from carrying out the Services.

- 5.2. Notwithstanding the provisions in paragraph 5.1 above, should any user of the Society's Services prove that he has suffered a loss or damage due to any negligent act or omission of the Society, its Surveyors, servants or agents, then the Society will pay compensation to such person for his proved loss, up to, but not exceeding, five times the amount of the fees charged for the specific services, information or opinions from which the loss or damage derives or, if no fee has been charged, a maximum of AED5,000 (Arab Emirates Dirhams Five Thousand only). Where the fees charged are related to a number of Services, the amount of the fees will be apportioned for the purpose of the calculation of the maximum compensation, by reference to the estimated time involved in the performance of the Service from which the damage or loss derives. Any liability for indirect or consequential loss, damage or expense is specifically excluded. In any case, irrespective of the amount of the fees charged, the maximum damages payable by the Society will not be more than AED5,000,000 (Arab Emirates Dirhams Five Millions only). Payment of compensation under this paragraph will not entail any admission of responsibility and/or liability by the Society and will be made without prejudice to the disclaimer clause contained in paragraph 5.1 above.

- 5.3. Any claim for loss or damage of whatever nature by virtue of the provisions set forth herein shall be made to the Society in writing, within the shorter of the following periods: (i) THREE (3) MONTHS from the date on which the Services were performed, or (ii) THREE (3) MONTHS from the date on which the damage was discovered. Failure to comply with the above deadline will constitute an absolute bar to the pursuit of such a claim against the Society.

Article 6

- 6.1. These General Conditions shall be governed by and construed in accordance with United Arab Emirates (UAE) law, and any dispute arising from or in connection with the Rules or with the Services of the Society, including any issues concerning responsibility, liability or limitations of liability of the Society, shall be determined in accordance with UAE law. The courts of the Dubai International Financial Centre (DIFC) shall have exclusive jurisdiction in relation to any claim or dispute which may arise out of or in connection with the Rules or with the Services of the Society.

- 6.2. However,

- (i) In cases where neither the claim nor any counterclaim exceeds the sum of AED300,000 (Arab Emirates Dirhams Three Hundred Thousand) the dispute shall be referred to the jurisdiction of the DIFC Small Claims Tribunal; and
- (ii) for disputes concerning non-payment of the fees and/or expenses due to the Society for services, the Society shall have the

right to submit any claim to the jurisdiction of the Courts of the place where the registered or operating office of the Interested Party or of the applicant who requested the Service is located.

In the case of actions taken against the Society by a third party before a public Court, the Society shall also have the right to summon the Interested Party or the subject who requested the Service before that Court, in order to be relieved and held harmless according to art. 3.5 above.

Article 7

- 7.1.** All plans, specifications, documents and information provided by, issued by, or made known to the Society, in connection with the performance of its Services, will be treated as confidential and will not be made available to any other party other than the Owner without authorization of the Interested Party, except as provided for or required by any applicable international, European or domestic legislation, Charter or other IACS resolutions, or order from a competent authority. Information about the status and validity of class and statutory certificates, including transfers, changes, suspensions, withdrawals of class, recommendations/conditions of class, operating conditions or restrictions issued against classed ships and other related information, as may be required, may be published on the website or released by other means, without the prior consent of the Interested Party. Information about the status and validity of other certificates and statements may also be published on the website or released by other means, without the prior consent of the Interested Party.
- 7.2.** Notwithstanding the general duty of confidentiality owed by the Society to its clients in clause 7.1 above, the Society's clients hereby accept that the Society may participate in the IACS Early Warning System which requires each Classification Society to provide other involved Classification Societies with relevant technical information on serious hull structural and engineering systems failures, as defined in the IACS Early Warning System (but not including any drawings relating to the ship which may be the specific property of another party), to enable such useful information to be shared and used to facilitate the proper working of the IACS Early Warning System. The Society will provide its clients with written details of such information sent to the involved Classification Societies.
- 7.3.** In the event of transfer of class, addition of a second class or withdrawal from a double/dual class, the Interested Party undertakes to provide or to permit the Society to provide the other Classification Society with all building plans and drawings, certificates, documents and information relevant to the classed unit, including its history file, as the other Classification Society may require for the purpose of classification in compliance with the applicable legislation and relative IACS Procedure. It is the Owner's duty to ensure that, whenever required, the consent of the builder is obtained with regard to the provision of plans and drawings to the new Society, either by way of appropriate stipulation in the building contract or by other agreement.
- In the event that the ownership of the ship, product or system subject to certification is transferred to a new subject, the latter shall have the right to access all pertinent drawings, specifications, documents or information issued by the Society or which has come to the knowledge of the Society while carrying out its Services, even if related to a period prior to transfer of ownership.

Article 8

- 8.1.** Should any part of these General Conditions be declared invalid, this will not affect the validity of the remaining provisions.

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Chapter 1 - GENERAL

1.1 - FIELD OF APPLICATION

1.1.1

These Rules apply to the design and construction of systems and equipment which are used to drill, workover and/or test hydrocarbon wells on fixed or mobile drilling units.

These Rules cover systems and equipment used in connection with drilling, workover and well testing operations down to the casing flange. In particular:

- blow out preventer (BOP) stack and control systems
- driller's console and drilling motors
- diverter
- choke/kill manifold
- derrick, derrick support structure and well test/burner booms
- drawworks, rotary table and rotating equipment
- bulk storage and transfer systems
- pipe handling and overhead drilling equipment
- compressors for drilling related functions
- internal combustion engines driving drilling machinery
- hoses-connecting riser and choke/kill systems
- pressure vessels
- high pressure piping, including mud and cement systems
- fire detection, gas detection and fire protection systems
- emergency shutdown system
- lifting equipment and devices
- electrical and instrumentation equipment
- well testing equipment
- motion compensation equipment
- marine risers, tensioning system, ball joint connections and telescopic joints.

The requirements of this rule only consider these facilities for what concerns the aspects of their safety and the safety of the unit on which they are installed with reference to the items indicated in para. 2.4.1, without entering into the merits of the efficacy of the service carried out in relation to the industrial activity foreseen.

With regard to:

- amendments to the Rules
- governmental rules
- compliance with other rules
- liability of TASNEEF

and other general matters, the relevant provisions of Section A (see (1) of para. 1.3.1), should be applied.

1.2 - ALTERNATIVE DESIGN CRITERIA

1.2.1

TASNEEF reserves the right to accept design criteria different from those mentioned in these Rules, provided that they meet, in the opinion of the Head Office, overall safety and serviceability requirements at least equivalent to those contained in these Rules.

Drilling systems and equipment which contain features for which the provisions of these Rules are not directly applicable, may be qualified provided that these Rules, where applicable, shall be specially considered by the Head Office.

1.3 - REFERENCES TO OTHER RULES OR GUIDES

1.3.1

In the text of these Rules reference is made to other TASNEEF Rules or Guides. These publications are referred to as follows:

- (1) Rules for the Construction and Classification of Ships
- (2) Guide for the Design, Construction and Installation of Steel Fixed Offshore Platforms
- (3) Rules for the Construction and Classification of Mobile Drilling Units or Other Similar Units
- (4) Guide for the Design, Construction and Installation of Steel Offshore Single Point Moorings.

Furthermore, regulations contained in international standards are sometimes mentioned as examples. For quick reference, a list of applicable standards or codes of practice is contained in Appendix 1. However, TASNEEF is prepared to consider alternative, appropriate standards or codes of practice.

Chapter 2 - QUALIFICATION

2.1 - GENERAL

2.1.1

Upon request from the interested Parties, a drilling system may be qualified by TASNEEF where the latter, in the opinion of Head Office, has been designed and constructed, whether or not under the supervision of TASNEEF, in compliance with the requirements of these Rules and other applicable requirements mentioned therein.

2.2 - CERTIFICATE OF QUALIFICATION

2.2.1

The qualification is granted by issuing the "Certificate of qualification" in which the main characteristics of the drilling system and the unit on which the system is installed are indicated together with any other relevant information. In addition, there will be an Appendix enclosed with the certificate, containing all the design parameters on which the qualification is based.

The Certificate of qualification is issued upon satisfactory completion of all checks and tests connected with the First Qualification Survey, with or without supervision during construction.

2.3 - SYMBOLS

2.3.1

A drilling system recognized as worthy of qualification is assigned the special notation **DSQ**.

A drilling system which has been constructed under the supervision of TASNEEF is also assigned the survey mark \otimes which precedes the symbol **DSQ**

2.4 - PURPOSE OF THE QUALIFICATION

2.4.1

- The qualification of a drilling system covers:
- materials used for the construction and relevant connections
 - structural strength
 - machinery, electrical installations, and piping foreseen for the design operations.

2.5 - TECHNICAL DOCUMENTATION

2.5.1

The technical documentation to be submitted consists of the reports, calculations, plans, operating procedures, manuals and any other information necessary to verify the design.

All plans and data should be submitted in quadruplicate.

2.5.2

The following documentation shall be submitted for approval; all plans and drawings are to include material specifications, welding specifications and dimensions, and strength calculations.

TASNEEF reserves the right to require additional drawings, plans and data necessary for a complete description of all systems subject to approval:

- (a) Process schematics and narrative of the drilling system with design parameters of pressure, temperature and flow.

Steady state conditions of design and potential transient strains. List of the applied design and construction codes and standards.

- (b) General arrangement, equipment layout and elevation drawings showing the location of all machinery, stores, and electrical equipment components.
- (c) Piping system plans and fitting details, including pressure ratings and sizes, P & I diagrams (piping and instruments diagrams).
- (d) Pressure vessel drawings including support details.
- (e) Complete drawings of the derrick and the relevant support structures, his static and dynamic design load conditions; well test/mud burner drawings.
- (f) Combustible hydrocarbon and hydrogen sulphide gas detection system plans and data including piping, detectors type, set points and location of alarm panels, and recalibration procedure for gas detectors.
- (g) Drawings and details for all pressure relief devices.
- (h) Riser and tensioning system details.
- (i) Control system details and operations panel arrangements for subsea and surface BOP systems.
- (j) BOP stack configuration and individual ram details.
- (k) BOP design criteria and supporting analysis.
- (l) BOP stack maintenance and operating manual.
- (m) Mud, cement and other high pressure application pump unit documentation showing compliance with the design standards.
- (n) Rotary drilling equipment detailed drawings for draw-works and brake, top drive system, if any, crown and travelling block, motion compensators, if any, hook, swivel, including all other primary lifting components.

Chapter 3 - SURVEYS

3.1 - GENERAL

3.1.1

In order to obtain TASNEEF qualification and the relevant certificate, the drilling system shall undergo a First Qualification Survey.

In order to retain this qualification during the course of service, the drilling system shall be subjected to the scheduled inspection and maintenance operations, to a Special Survey for the renewal of the Certificate of qualification and to possible Occasional Surveys.

A list of the main activities foreseen for the annual and special surveys is contained in Appendix 2.

In principle, the requirements given in Section A (see (1) of para. 1.3.1 of Chapter 1), where applicable, are to be complied with.

TASNEEF reserves the right to integrate or modify such requirements, depending on the specific characteristics of the system, after consultation with the interested parties.

A list of the main activities foreseen for the annual and special surveys is contained in Appendix 2.

Chapter 4 - MATERIALS, WELDING, TESTING, CORROSION PROTECTION

4.1 - MATERIALS, WELDING, TESTING

4.1.1

For selection of materials, welding processes and relevant tests and checks reference is to be made to the provisions given in (1) and (2) of para. 1.3.1 of Chapter 1.

4.2 - QUALITY CONTROL PLAN

4.2.1

As regards tests and checks of components or equipment during and after fabrication, a Quality Control Plan is to be submitted by the builder for approval.

Following an examination of the Quality Control Plan, TASNEEF will indicate the cases in which:

- f the builder's documentation and certification is accepted;
- f qualified and recognized laboratory certification is required;
- f a TASNEEF check during fabrication is required;
- f a TASNEEF survey after fabrication is required;
- f specific TASNEEF rules are to be complied with.

TASNEEF reserves the right to require additional tests checks in all cases, if the foreseen tests and checks are inadequate or insufficient.

4.3 - SEALING MATERIALS

4.3.1 - Elastomeric materials

The materials used for sealing must be suitable for the intended operating pressures and temperatures. Age sensitive materials for critical components must have a defined storage life and be identified in storage as to month and year of manufacture.

4.3.2 - Ring joint gaskets

Ring joint gaskets are to be of soft iron, low carbon steel or stainless steel in accordance with API 6A, Table 1.4C.

The use of synthetic gaskets will be taken into consideration in relation to the proposed use.

Gaskets which are coated with a protective coating material, such as fluorocarbon or rubber for shipment and storage, are to have the coatings removed prior to installation.

4.4 - CORROSION PROTECTION

4.4.1

All steel structures are to be suitably coated or cathodically protected against corrosion.

The adopted corrosion protection systems, their design, the relevant materials used and the manufacturing and installation procedures are subject to approval on the basis of the relevant provisions of (2) of para. 1.3.1 of Chapter 1 or of other standards previously accepted to by TASNEEF.

In addition, materials which will be in contact with hydrogen sulphide are to be selected within appropriate limits of chemical composition, heat treatment and hardness. For this purpose, selection of materials is to conform to specific, recognized standards, such as NACE Standard MR-01-75.

Chapter 5 - PIPING

5.1 - PIPING DESIGN

5.1.1

Piping and fitting design shall comply with the dimensioning criteria and provisions given in (1) of para. 1.3.1 of Chapter 1, as far as applicable. In addition to those general requirements, the following additional provisions apply.

5.1.2

For all piping systems not covered by the above-mentioned TASNEEF rules, a complete strength calculation developed in compliance with recognized standards (e.g. ANSI/ASME B31.3) is to be submitted. Relevant factors and combination of factors are to be taken into account during design: ambient and dynamic effects, weight, thermal expansion and contraction effects, support movements, and cyclic effects are to be considered.

5.1.3

Wall thickness design of all piping shall take into account corrosion, erosion and bending allowances; where piping is likely to be exposed to erosion (e.g. mud and cement systems), the erosion allowance is to be specified.

5.2 - FLEXIBLE HOSES

5.2.1

The location of flexible hose elements are to be clearly shown in the design documentation.

5.2.2

Flexible hose elements approved for their specific use, may be employed in locations where hard piping is unsuitable.

However, the type of flexible piping chosen shall be adequate for every environmental condition which could occur in the installation site.

5.2.3

All flexible piping elements are to be accessible for inspection.

5.2.4

Means are to be provided to isolate flexible piping parts if used in positions where uncontrolled outflow of medium is critical for persons or machinery.

5.2.5

The design bursting pressure for flexible hoses is normally to be at least four times the maximum working pressure.

The bursting pressure of flexible hoses with working pressure equal to or greater than 52 N/mm² intended for the mud and cement systems is to be at least 2,25 times the maximum working pressure.

5.3 - PIPING CONNECTIONS

5.3.1

Detachable pipe connections are acceptable, in TASNEEF's opinion, if necessary for assembly and dismantling.

5.3.2

The piping connections are to be in accordance with the applied design code or standard, or are to be approved for their intended use.

5.4 - PIPE SUPPORTING ELEMENTS

5.4.1

Piping is to be supported in such a way that its weight is not taken by connected machinery or that heavy valves and fittings do not cause large additional stresses in adjacent pipes.

5.5 - PIPE WELDING, HEAT TREATMENTS AND NON DESTRUCTIVE TESTS

5.5.1

As regards welding preparation and execution, relevant heat treatment and Non Destructive Tests (NDT) of the drilling system piping, provisions given in (1) of para. 1.3.1 of Chapter 1 are to be complied with, as far as applicable.

5.5.2

TASNEEF reserves the right, however, to require the application of specific recognized standards especially for high pressure drilling piping (e.g. mud, cement and tensioning air systems).

In particular, such specific provisions may regard the following items:

- choice of materials
- welding materials and procedures
- heat treatment of welded joints
- examination criteria of welded joints.

5.6 - LEAK TESTING

5.6.1

Prior to initial operation, each piping system shall be tested to ensure tightness in compliance with the leak test specification given in (1) of para. 1.3.1 of Chapter 1.

5.6.2

If hydrostatic pressure testing of piping involves particular problems (process contamination, linings damage or brittle fracture danger), alternative methods of testing such as the pneumatic one may be accepted when agreed to by TASNEEF Head Office; leak testing procedures (pneumatic or other procedures), complying with recognized standards (e.g. ANSI/ASME B31.3), are to be submitted.

Chapter 6 - ELECTRICAL INSTALLATIONS

6.1 - GENERAL

6.1.1

Electrical installations are to comply with the applicable provisions given in (3) of para. 1.3.1 of Chapter 1 and with the additional criteria stated in the following Articles.

6.2 - HAZARDOUS AREAS

6.2.1

In addition to the hazardous areas indicated in the applicable provisions cited in 6.1.1, open spaces within 3 m of drilling apparatus, flanges of the relevant piping (mud lines) and any other source of gas or flammable vapors are to be classified as hazardous areas.

6.3 - ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS

6.3.1

As far as electrical installations in hazardous areas are concerned, the applicable provisions cited in 6.1.1 are to be complied with.

For the open spaces in 6.2.1:

- certified intrinsically safe
- certified explosion proof
- certified pressurized enclosure type
- certified increased safety

machinery and electrical equipment may be accepted. Through runs of cables may be permitted.

Chapter 7 - SAFETY SYSTEMS

7.1 - GENERAL

7.1.1

As far as safety systems (fire protection, gas detection and other safety appliances) are concerned, the provisions given in (3) of para. 1.3.1 of Chapter 1 are to be complied with. In addition to the above-mentioned general requirements, the following additional requirements apply.

7.2 - GAS DETECTION

7.2.1

Combustible hydrocarbon and toxic hydrogen sulphide detection and warning systems are to be provided.

Both combustible gas and hydrogen sulphide detectors are to be installed in the following areas at least:

- drill floor
- mud tanks area
- shale shaker area
- above and around mud flowline areas.

These detectors are to be placed on a centerline spacing not exceeding 3,5 m.

The combustible gas detectors are to be connected to an audio/visual alarm system with indicators on the drill floor and in other normally manned areas. The alarm system is to clearly indicate the location of the gas hazard. The combustible gas detectors are to alarm at 20% lower explosion limit (LEL) and at 60% LEL. The hydrogen sulphide gas detectors are to alarm at 5 ppm and 10 ppm.

The combustible hydrocarbon gas detectors are to be calibrated, in any case, between 0 and 100% LEL; the hydrogen sulphide gas detectors are to be calibrated between 0 and 100 ppm.

The ESD (Emergency Shut Down) system design, connected with the gas detection alarm levels are to comply with the automation systems rules given in (1) of para. 1.3.1 of Chapter 1, as far as applicable. The relevant P & I diagrams are to be submitted.

Two portable gas detector explosimeters are to be available to detect small leaks.

A wind sock or any other suitable device is to be fitted in order to enable personnel to escape in the proper direction in case of a gas leak.

7.3 - BREATHING APPARATUS

7.3.1

A minimum of four complete sets of positive pressure type, approved by TASNEEF, readily accessible and rapidly donned breathing apparatus are to be available.

These sets are to be properly marked and stowed.

A minimum of one unit of each of these sets is to be placed on the drill floor, shale shaker area and mud tank area.

Chapter 8 - LIFTING EQUIPMENT

8.1 - GENERAL

8.1.1

This Chapter gives provisions for lifting and handling systems, drilling derricks, derrick substructures, well test/mud flare booms and hoisting systems.

These structures are to comply with the provisions of (4) of para. 1.3.1 of Chapter 1, as far as applicable. Alternatively, other recognized standards, i.e. API Spec.4E, may be used when agreed to by TASNEF Head Office.

In addition to those general requirements, the following additional provisions apply to the derrick of the drilling system:

- (a) if the vent lines from the mud degassing tank are fitted on the derrick they are to extend four meters above the crown block, or above any other equipment located higher up which could be a source of primer for gaseous discharges. These lines are to be fitted with a snuffer in case of accidental ignition of vented hydrocarbons;
- (b) a safety device is to be installed to prevent the travelling block from coming into contact with the crown block.

Chapter 9 - DRILLING SYSTEM

9.1 - GENERAL

9.1.1

This Chapter contains the provisions for particular sub-systems as well as other requirements which apply to many of the systems. The designer has to consider the system as a whole, taking into account the possible interfacing and interdependence of the sub-systems.

9.2 - MARINE RISERS

9.2.1

Marine risers are to be designed and fabricated in accordance with recognized standards, i.e. API RP 2Q and API RP 2R.

9.3 - BLOW-OUT PREVENTER (BOP) SYSTEM

9.3.1 - General

The BOP system consists of the wet and dry stack, the BOP control system, the diverter and the diverter control system.

All components of the system are to be of the fire resistant type and are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable. Alternatively, other recognized standards may be used when agreed to by TASNEEF Head Office.

9.3.2 - BOP stack

The BOP stack is to include at least the following elements:

- a bag type anular preventer
- a blind shear ram preventer with mechanical locking device
- two pipe ram preventers with mechanical locking device.

The design of the BOP stack is to ensure that fluid and gas can be conducted out of the system and fluid can be pumped in. For this purpose, valves complying with the provisions of 9.4 are to be fitted. The BOP control panel is to be placed as close as possible to the driller's console.

9.3.3 - Diverter

A diverter is to be provided for exploration drilling. The diverter is to have a securing element for closing around the drilling equipment in the hole and is to be equipped with two discharge lines, at least 305 mm (12") in diameter, which are to be directed overboard in opposite directions.

The course of the diverter's discharge lines is to be as straight as possible, and where necessary, changes of direction of a wide radius of curvature are to be foreseen.

The thicknesses of the piping of these lines will have to be made taking into account the appropriate extra thicknesses needed to cope with the considerable wear to which they are subjected.

9.3.4 - BOP control system

The design of the BOP control system shall ensure that anular blow-out preventers, at least 500 mm in diameter, can be actuated and closed within 45 seconds. Ram and anular preventers which are smaller than 500 mm may be

accepted provided that they are able to actuate and close within 30 seconds.

In the case of surface BOPs, the closing unit accumulators are to have an aggregate volumetric capacity to provide, with pumps inoperative, the fluid volume necessary to close one pipe ram, the anular preventer and to open the hydraulic choke/line valve.

For subsea BOPs, the capacity of the close unit is to be at least 1,5 of the one required for surface BOPs.

Location of the main power unit of the BOP control system is to be chosen in order to ensure protection from operations carried out on the drill floor and cellar deck.

Access to the BOP control unit is to be provided without crossing the drill floor or cellar deck.

The driller panel is to be located beside the drill console, connected in parallel to the control panel installed on the power unit.

The BOP control panel is to have a parallel connected operations panel installed at an adequate distance from the drill control cabin and in such a way that it is accessible even when the main drill control cabin is not accessible. The operations panel is to be directly connected to the main hydraulic control unit of the BOP, in parallel and not in series with the driller panel.

The BOP control and parallel operations panel are to clearly indicate:

- the BOP's condition (opened or closed);
- pressures and volumes of the control fluid (not for the auxiliary panel);
- accumulators pressure.

In addition, alarms are to be provided for low pressure in the accumulators, loss of accumulator power supply and low level of fluid in storage tanks.

In the case of subsea BOPs, control fluid flowmeters to measure the fluid going to the subsea pods are to be provided.

The diverter control system control panel is to be placed close to the driller's console. Interlocks are to be provided so that the diverter valve opens before the diverter closes around the drilling equipment. A valve, suitably sized, is to be provided on the drill floor inside the preventer.

In order to ensure redundant piping to the subsea BOP stack, two independent BOP pods are to be installed.

9.4 - CHOKE AND KILL SYSTEM

9.4.1 - General

The choke and kill system consists of the following main components:

- the choke manifold
- the choke and kill lines from the BOP stack
- the piping to the cementing unit
- the connection between the drilling fluid manifold and the choke manifold.

All the components of the system are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable. Alternatively, other recognized standards may be used when agreed to by TASNEEF Head Office. In addition, the following requirements apply.

9.4.2 - Choke and kill lines

Each choke and kill line connecting the BOP stack to the choke manifold is to be equipped with two valves installed on the BOP stack. These valves are to be hydraulically remote controlled and, if the BOP stack is installed on the seabed, these valves are to be provided with operators normally closed in the case of failure.

Chapter 9 - DRILLING SYSTEM

When the BOP stack is installed on the platform and easily accessible, one of the said valves can be manually operated instead of by remote control.

The lines from the stack and the high pressure side of the choke manifold are to be designed for the same design pressure as the BOPs.

For drilling operations using subsea BOPs, the arrangement of the choke and kill and the relative lines is to be such as to allow pumping through the choke or kill line and simultaneous flowing back over the chokes through the opposite line.

For the operations which require the use of surface BOPs, the above-mentioned interchangeability is not required, but the redundancy of the connecting lines between BOP and choke manifold will have to be ensured.

9.4.3 - Piping layout

The piping is to be designed so that returns from the choke manifold through an installed mud/gas separator are possible.

Choke manifold discharges are to be connected to the well test flare. The choke manifold is to be provided with at least three chokes. At least one of these shall permit manual operation. The possibility to isolate and replace any one of the chokes while the manifold is in use is to be ensured.

The remotely controlled choke is to be operated from a special panel which shall indicate at least the drill pipe pressure, the choke manifold pressure, as well as the drilling fluid pump rate. At the place of operation of the manually adjustable choke, the drill pipe pressure as well as the choke manifold pressure are to be clearly legible.

9.5 - MUD CIRCULATING SYSTEM

9.5.1 - General

The mud circulating system consists of the following main components:

- high pressure mud pumps
- pulsation dampeners
- gas mud separators
- vacuum degasser
- desander
- desilter
- shale shaker
- related piping and manifolds.

All the components of the system are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable. Alternatively, other recognized standards may be used when agreed to by TASNEEF Head Office. In addition, the following requirements apply.

9.5.2 - General provisions

The volume of the mud tanks is to be sufficient for the intended drilling operations.

If oil based mud is used, special attention is to be paid to the ventilation of spaces where fumes may accumulate.

Pulsation dampeners and safety relief valves set at a pressure not exceeding the maximum allowable pressure of the system are to be foreseen for the high pressure mud pumps.

9.5.3 - Piping layout

The arrangement of the mud circulating piping system is to be such that the mud reconditioning system may be run in a series of degassers, desanders, desilters and so on in order to prevent mud from entering other piping systems.

The mud treatment by means of the said equipment is to be carried out following an ordered and entire sequence so as to ensure the safety of the system and the efficiency of the separation required.

9.5.4 - Signals

The following parameters are to be indicated:

- volume, weight and temperature of the mud entering and leaving the borehole;
- gas content of the drilling fluid or mud;
- drilling depth and penetration rate;
- pit volume and variations in active mud volume (relevant mud level alarms complying with the relevant provisions of (3) of para. 1.3.1 of Chapter 1);
- discharge pressure and rate of the mud pumps;
- volume variations between the discharged and the returned drilling fluid to the well;
- volume relevant to the trip tank system.

All the above-mentioned indication signals/alarms are to be placed near the drilling console.

9.6 - BULK STORAGE AND TRANSFER SYSTEM

9.6.1 - General

The bulk storage and transfer system consists mainly of the bulk storage containers, the utility air system and the transfer piping. All the components of the system are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable.

Alternatively, other recognized standards may be used when agreed to by TASNEEF Head Office.

In addition, the following requirements apply.

9.6.2 - Utility air system

The utility air piping is to be designed so that it can be purged with dry air before the transfer operation.

Relief valves, set at a pressure not exceeding the working pressure of the bulk storage tanks, are to be provided in the utility air transfer piping.

The utility air is to be dried to a dew point at least 7°C lower than the minimum ambient air temperature.

9.6.3 - Relief devices

Safety relief valves or rupture discs piped to a safe relief area are to be placed on the bulk storage containers.

9.7 - WELL TEST SYSTEM

9.7.1 - General

The well test system consists mainly of the well test separator, the well test lines and related manifolds. All the components of the system are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable. Alternatively, other recognized standards may be used when agreed to by TASNEEF Head Office.

In addition, the following requirements apply.

Chapter 9 - DRILLING SYSTEM

9.7.2 - General requirements

In designing the arrangements and safety systems of the well test system, special attention is to be paid to normal manning during the operations, the accessibility of manual controls and the intermittent operation of the system. In particular, an operating manual containing all the safety precautions and the procedure for evacuating air from the system prior to introducing well fluid through the test X-tree is to be submitted.

The well test separator is to be equipped with two relief valves, each sized for the maximum delivery capacity foreseen for a single well test.

Two complete lines are to be provided to connect the well test separator to the well test/mud burner. Flexible hoses from the swivel, the swivel and the kelly are not allowed as part of the test line.

The test lines to the mud burners are to be directed, along two different routes, to opposite sides of the drilling unit.

Interlocks to ensure the opening of one relief valve are to be provided.

A seawater spray ring sized to ensure the cooling of the structural members of the well test/mud burner is to be placed on each of the burners.

The diameter of the well test/mud burner lines is not to be smaller than the largest internal diameter foreseen in the choke manifold.

A device to prevent back flow to the air system is to be provided when compressed air is foreseen to burn the crude oil. A non-return valve or other approved device may be accepted.

9.8 - ROTATING EQUIPMENT AND ACCESSORIES

9.8.1 - General

The rotating equipment consists mainly of the rotary table, the kelly, the swivel, the top drive, slips and tongs. All the components are to comply with the relevant provisions of (1) of para. 1.3.1 of Chapter 1, as far as applicable.

Other recognized standards may be used when agreed to by TASNEEF Head Office.

In addition, the following requirements apply.

9.8.2 - Kelly cocks

Two kelly cocks are to be foreseen for the drilling unit. One of them is to be placed below the swivel and the other at the bottom of the kelly. The design pressure of the kelly cocks is to be at least the rated pressure of the BOP.

9.8.3 - Tongs

All tongs are to be securely attached to the derrick/mast or back-up post. They are also to be anchored by suitable devices, such as wire cable lines or stiff arms. These cables or arms are to have a breaking strength greater than the force exerted by the tongs.

The arrangement of the back-up cables on the tongs is to be such that rotation of the tongs beyond the foreseen limits is not allowed.

Safety relief valves are to be provided on the power tong pressure system. The setting pressure of these valves is to be no higher than the maximum working pressure of the system.

Suitable securing of the safety cables attached to the kelly hose, tongs and other suspended equipment is to be provided in order to prevent them from breaking loose.

Appendix 1 - LIST OF STANDARDS OR CODES OF PRACTICE

A1.1 - GENERAL

A1.1.1

This Appendix provides a list of applicable standards or codes of practice. Other alternative standards may be applied where agreed to by RINA Head Office.

ANSI American Standards Institute
1430 Broadway
New York, N.Y. 10018

B31 Code for Pressure Piping including Sections B31.1, B31.2, B31.3, B31.4, B31.5

B16 Code for Pressure Fittings, including Sections B16.1, B16.2, B16.3, B16.4, B16.5

API American Petroleum Institute
2101 L Street N.W.
Washington, D.C. 20037
Production Dept.
300 Corrigan Tower
Dallas, Texas 75201

Spec.2C Specifications for Offshore Cranes (Supplement 2, 1975)

RP2D Recommended Practice for Operation and Maintenance of Offshore Cranes (including Supplement 1, 1975)

RP2G Recommended Practice for Production Facilities on Offshore Structures (including Supplement, 1975)

Spec.4E Specification for Drilling and Well Servicing Structures

Spec.6A Specification for Wellhead Equipment

Spec.6D Specification for Pipeline Valves, End Closures, Connectors and Swivels

Spec.6FA Specification for Fire Test for Valves

Spec.7 Specification for Rotary Drilling Equipment

Spec.8A Drilling and Production Hoisting Equipment

Spec.9A Specification for Wire Rope

RP9B Recommended Practice on Application, Care and use of Wire Rope for Oil Field Service

Spec.12J Specification for Oil and Gas Separators

Spec.12K Specification for Indirect Oil-Field Heaters

RP14A Specification for Subsurface Safety Valves Equipment

RP14B Recommended Practice for Design, Installation and Operation of Subsurface Safety Valve Systems

RP14C Recommended Practice for Analysis, Design, Installation and Testing of Basic Surface Systems on Offshore Production Platforms

RP14D Specification for Wellhead Surface Safety Valves and Underwater Safety Valves for Offshore Service

RP14E Recommended Practice for Design and Installation of Offshore Production Platform Piping Systems

RP14F Recommended Practice for Design and Installation of Electrical Systems for Offshore Production Platforms

RP14G Recommended Practice for Fire Prevention and Control on Open Type Offshore Production Platforms

Spec.16A Specification for Drill Through Equipment

RP53 Blowout Prevention Equipment Systems

RP500B Recommended Practice for Classification of Areas of Drilling Rigs and Production Facilities on Land and on Marine Fixed and

Mobile Platforms (Includes Supplement 1, 1977)

RP520 Recommended Practice for the Design and Installation of Pressure-Relieving Systems in Refineries, Part I - Design

RP520 Recommended Practice for the Design and Installation of Pressure-Relieving Systems in Refineries, Part II - Installation

RP521 Guide for Pressure Relief and Depressurizing Systems

RP-2K Care and Use of Marine Drilling Risers

RP-2Q Design and Operation of Marine Drilling Risers Systems

RP-2R Recommended Practices for Design Rating and Testing of Marine Drilling Riser Couplings

BUL-2J Comparison of Marine Drilling Riser Analysis

RP1111 Recommended Practice for Design, Construction, Operation and Maintenance of Offshore Hydrocarbon Pipelines

RP2003 Recommended Practice for Protection Against Ignitions Arising Out of Static, Lightning and Stray Contents

ASME American Society of Mechanical Engineers
345 East 47th Street
New York, N.Y. 10017
Boiler and Pressure Vessel Code including Sections I, II, V, VIII and IX

IEEE Institute of Electrical and Electronic Engineers
345 East 47th Street
New York, N.Y. 10017

STD45 Recommended Practice for Electric Installation on Shipboard

STD142 Recommended Practice for Grounding of Industrial & Commercial Power Systems

STD242 Recommended Practice for Protection and Coordination of Industrial & Commercial Power Systems

STD462 General Requirements for Distribution, Power and Regulating Transformers

IEC International Electrotechnical Commission
1 Rue De Varembe
Geneva, Switzerland

IPCEA Insulated Power Cable Engineers Association
192 Washington Street
Belmont, MA 02178

NEMA National Electrical Manufacturers Association
2101 L Street
NW Washington, D.C. 20037

Gen.Pub. Electrical Manufacturer's Standards

IEE The Institution of Electrical Engineers
70 Nightingale Road
Hitchin, Herts SG5 1RJ, England
Recommendations for the Electrical and Electronic Equipment of Mobile and Fixed Offshore Installations

UL Underwriters Laboratory
Global Engineering Documents
P.O. Box 2504
2625 Hickory Street
Santa Ana, CA 92707

ART486 Standard for Splicing Cable (Wire Connectors and Soldering Lugs)

STD.711 Rating and Fire Testing of Fire Extinguishers

VDE Verband Deutscher Elektrotechniker eV
6 Frankfort A.M., Stresemannallee 21
West Germany

Appendix 1 - LIST OF STANDARDS OR CODES OF PRACTICE

- Gen.Pub. General Electrical Specifications
- NFPA** National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02210
- 37 Standard for the Installation and Use of
Stationary Combustion Engines and Gas
Turbines
- 70 National Electrical Code
- 496 Standard for Purged and Pressurized En-
losures for Electrical Equipment in Haz-
ardous Locations
- NACE** National Association of Corrosion Engineers
P.O. Box 986
Katy, TX 77450
- RP-01-75 Recommended Practice Control of Internal
Corrosion in Steel Pipelines and Piping
Systems
- RP-06-75 Recommended Practice Control of Corro-
sion on Offshore Steel Pipelines
- MR-01-75 Sulphide Stress Cracking Resistant Metallic
Material for Oilfield Equipment
- BSI** British Standards Institution
2 Park Street
London W1A 2BS England
- Quality Assurance Program Recognized Standards**
- ISO 9000 - Quality Management and Quality Assurance Standards
 - ANSI/ASQC S-1.15 - Generic Guidelines for Quality Systems
 - ASME SPPE 1
 - Norwegian Standard (NS) 5801 to Norwegian Standard (NS) 5803 - Requirements for the Contractor's Quality Assurance with Included Reference Documents
 - British Standards (BS) 5750 Part I to III - Quality Systems, Part I - Specification for Design, Manufacture and Installations

Appendix 2 - SURVEYS

A2.1 - GENERAL

A2.1.1

This Appendix contains a list of the activities to be considered as a basis for the annual and special surveys.

A2.2 - ANNUAL SURVEYS

A2.2.1

- (a) Exposed surfaces of the derrick, derrick support structure, burner booms, stabbing boards, racking platforms and drilling equipment foundations shall be examined and placed in satisfactory condition. The inspection of the derrick and related structural members shall include the following:
 - the general condition of the structure, especially bent, missing or abraded parts and lost corrosion protection coatings
 - tightness of bolts
 - condition of wire ropes and fittings
 - functional testing of gear
 - examination of the condition of welded joints, and thickness gaugings as required.
- (b) General external examination, so far as accessible, of the items mentioned in Section 1.1.1 of these Rules for damage, excess corrosion, fracturing, or malfunction.
- (c) Protective covers, insulation, shrouds, and protective guards around moving parts are to be in position and in working order.
- (d) Derrick walkways and ladders, drill floor and drill system machinery spaces are to be surveyed with particular attention to fire and explosion hazards and it is to be ascertained that emergency escape routes are not blocked.
- (e) External examination of pressure vessels and their appurtenances, including safety devices, foundations, controls, relieving gear, piping systems, flexible hoses, insulation and gauges.
- (f) Examination of safety shutdown devices.
- (g) Verification of calibration of the gas detectors.
- (h) General examination of all electrical and instrumentation systems including protective devices and cable supports.
- (i) Examination of mud and cement systems for potential hazards.
- (j) Examination of the BOP test log.

A2.3 - SPECIAL SURVEYS

A2.3.1

The Special Survey is to include all the items listed under the Annual Survey and in addition, the following:

- (a) Inspection of the foundations connected to the structure relevant to main machinery and gearboxes.
- (b) Internal examination and/or thickness gauging of pressure vessels and pressure-retaining components, testing of relief valves and pressure piping systems as considered necessary by the surveyor.
- (c) Hydrostatic testing of pressure vessels and other pressure-retaining components related to the drilling system to 1,25 times the maximum allowable working pressure.
- (d) Pressure testing of drilling system, piping systems and flexible hoses to 1,25 times the maximum allowable working pressure.

- (e) Examination of electrical installation and machinery within dangerous areas, with particular reference to those fitted inside production modules and mud pits and around shaleshakers.
- (f) Examination and check of insulation resistance of motors which are part of the drilling system.
- (g) Vibration checks of rotating drilling machinery.
- (h) The blow-out preventer shall be subjected to a complete performance test and pressure tested to working pressure.
- (i) Examination of mud and cement pump fluid ends.
- (l) Examination of the Safety Systems, described in Chapter 7 of these Rules, including testing of gas detection systems and operational test of emergency shutdown systems.

A2.3.2

Particular tests and checks involving the dismantling of machinery or components may be agreed with TASNEEF Head Office; among them, functional test or another test requiring qualified personnel, may be carried out by such a person(s) entrusted by the Owner, in the presence of and to the satisfaction of the TASNEEF Surveyor.

A3.1 - COMPLIANCE WITH GOVERNMENTAL REQUIREMENTS

A3.1.1

The provisions contained in these Rules reflect the international design and layout standards at the present time.

Art. 32

Provisions regarding machinery

Load lifting equipment must be provided with devices able to allow at any time loads to stop; the velocity of descent must always be kept within safe limits.

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The components of the drill string handling system (wire line, drawwork, crown block, travelling block and hook) must be designed based on the severest normal working conditions.

.. omissis .

Art. 33

Pressure vessels

Steam boilers, internal-combustion engines and pressure vessels must meet safety requirements as per existing regulations.

Art. 34

Electrical equipment

Electrical equipment, machinery and appliances must be constructed in accordance with safe use requirements related to the environment where the installation is placed; they must be installed, connected and protected in order to avoid any danger.

In the installation, modifications, repair, maintenance, inspection of any electric equipment, machinery or appliances, all precautions must be taken in order to avoid any lightning, fire or explosion hazard.

Art. 35

Emergency electrical system

The drilling unit must be provided with an emergency electrical system able to automatically run in case of failure of the main electrical system.

The emergency system must have sufficient capacity to feed simultaneously the electrical equipment actuating visual and sound signals, tele-communication equipment, monitoring and alarm system, fire-fighting systems and safety systems against uncontrolled blow-outs, navigation

control systems, hoists, divers' safety apparatus, emergency lights in the most important places in terms of safety (living quarters, engine room, control room, decks and working areas, heliports, gathering stations for ship abandonment).

The emergency system must be placed on or above the main deck, far from the normal power system and it must have its own fuel tank able to ensure at least 24-hour continuous running.

"... omissis ..."

Art. 36

Emergency batteries

In addition to the normal electrical system and to the emergency system described in previous Art. 35, the drilling unit must be provided with a set of emergency batteries, having enough capacity to ensure a six-hour continuous supply of current to the telecommunication systems, visual and sound signals, emergency lights placed along the ways of escape, in the heliport, in the gathering stations for ship abandonment.

The output of the set of batteries must automatically take over said electrical equipment whenever the emergency electrical system per Art. 35 stops running, and the main electrical system is not operating.

Art. 37

Hazardous areas

On the drilling units, an area is classified as "hazardous" which is marked by a circle with a 10 m radius measured on the rig floor from the well center, extending vertically 3 m above the rig floor and 9 m below the rig floor.

On the above-mentioned units, another area classified as "hazardous" is marked in all directions by a radius of at least 3 m around shaleshakers, mud pits, ditches and all other open installations used for mud circulation.

On production platforms the same classification of "hazardous areas" is to apply, as in the two previous paragraphs, in the case of drilling or workover by a service rig on existing wells.

On these platforms, every area with a radius of not less than 15 m around a hydrocarbon free outlet is classified as "hazardous".

"... omissis ..."

Art. 38

Provisions for hazardous areas

Within areas classified as "hazardous" as defined in the previous Article, electric generators and electrical equipment must comply with the following directions:

- (1) Electric generators, lighting installations and the other fixed electrical equipment must be explosion-proof, in compliance with CEI regulations.
- (2) Fixed electrical equipment, as per the previous point, must have separate main switches for electrical power and lighting, placed outside the "hazardous area" and in such a way as to be readily accessible in case of emergency.
- (3) Portable electrical equipment and lamps must be of an explosion-proof type.
- (4) Internal combustion engines must be of a sealed type, located in gas-tight compartments made of fireproof materials and kept in overpressure.

In any case, the feed air intake points and exhaust gas points must be placed outside the "hazardous area".

Art. 43

Fire-fighting means

Every drilling or production unit must be equipped with automatic fire detectors and fire extinguishing systems